

WHAT IS CLAIMED IS:

1. A control module for use in an image display system, comprising:
  - a histogram module operable to collect data associated with a first frame of a signal received by the control module, the histogram module comprising a plurality of bins capable of counting a plurality of pixels associated with the first frame, wherein each of the plurality of pixels comprises a maximum intensity component at a particular color level; and
  - a processor capable of determining a new position of an adjustable aperture based at least in part on the data collected by the histogram module, the processor further capable of determining a gain to apply to a subsequent frame of the signal based at least in part on the new adjustable aperture position.
2. The control module of Claim 1, wherein the processor determines the position of the adjustable aperture based at least in part on the data collected by the histogram module and on a parameter associated with a number of clipped pixels.
3. The control module of Claim 2, wherein the parameter associated with the number of clipped pixels comprises no more than a small fraction of the total number of pixels with a modulator.
4. The control module of Claim 1, wherein the processor determines the gain to apply to the subsequent frame by accessing an aperture position to gain table.

5. The control module of Claim 1, wherein the adjustable aperture selectively varies an amount of light transmitted along a projection path.

5        6. The control module of Claim 1, wherein the histogram comprises thirty-two storage modules and wherein each storage module operates to count the maximum intensity component of a particular color level.

10       7. The control module of Claim 1, wherein the processor determines a new position of the adjustable aperture based on a step size to move the adjustable aperture and a target aperture position.

15       8. The control module of Claim 1, further comprising:

        a memory coupled to the processor and capable of storing data associated with an image intensity algorithm;

20       a video processing module coupled to the histogram module and capable of processing the received signal on a frame-by-frame basis; and

        a gain module coupled to the video processing module and the processor, the gain module capable applying the  
25       gain to the subsequent frame received by the control module.

9. A method of controlling a position of an aperture in an image display system, comprising:

determining a target aperture position based at least in part on a parameter associated with a number of  
5 clipped pixels and data stored in a histogram, wherein the data stored in the histogram comprises data of a first frame;

determining a step size to move the aperture based at least in part on a current background storage module  
10 and a magnitude of a difference between the target aperture position and a current aperture position; and

determining a gain to apply to a subsequent frame based at least in part on a new aperture position, wherein the new aperture position is based at least in  
15 part on the current aperture position and the step size to move the aperture.

10. The method of Claim 9, wherein determining the target aperture position comprises:

20 determining a histogram storage module that contains a pixel equaling the parameter associated with the number of clipped pixels; and

accessing a target aperture position table based on the histogram storage module that contains the pixel  
25 equaling the parameter associated with the number of clipped pixels.

11. The method of Claim 9, wherein the parameter associated with the number of clipped pixels comprises no  
30 more than a small fraction of the total number of pixels with a modulator.

12. The method of Claim 9, wherein the histogram comprises thirty-two storage modules and wherein each storage module operates to count a maximum intensity component of a particular color level.

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13. The method of Claim 9, wherein determining the step size to move the aperture comprises:

determining a histogram storage module that contains a pixel equaling a background pixel value and storing  
10 that histogram storage module as the current background storage module;

determining a magnitude of a difference between the current background storage module and a preceding background storage module;

15 if the magnitude of the difference between the current background storage module and the preceding background storage module exceeds a large storage module change threshold, setting the aperture step size to a maximum movement value;

20 otherwise:

determining the magnitude of the difference between the current aperture position and the target aperture position;

25 if the magnitude of the difference between the current aperture position and the target aperture position exceeds a large aperture movement threshold, setting the aperture step size to a large movement value;

otherwise setting the aperture step size to a minimum movement value.

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14. The method of Claim 9, wherein determining the gain to apply to the subsequent frame comprises accessing an aperture position to gain table.

5        15. The method of Claim 14, wherein the aperture position to gain table comprises 256 positions.

16. The method of Claim 9, further comprising:  
comparing the new aperture position to the target  
10 aperture position; and

determining whether the new aperture position will exceed the target aperture position;

if the new aperture position will exceed the target aperture position, then limit the step size to move the  
15 aperture to a limited step size to prevent the new aperture position from exceeding the target aperture position;

otherwise move the aperture based on the step size.

17. A control module for use in an image display system, comprising:

5 a processor capable of determining a new position of an adjustable aperture based at least in part on a step size to move the adjustable aperture and a target aperture position, wherein the target aperture position is based at least in part on data of a first frame received by the control module; and

10 a gain module coupled to the processor, the gain module capable applying a gain to a subsequent frame received by the control module, wherein the amount of gain applied to the subsequent frame is based at least in part on the new adjustable aperture position.

15 18. The control module of Claim 17, wherein the processor is further capable of determining a gain to apply to a subsequent frame based at least in part on the new adjustable aperture position.

20 19. The control module of Claim 17, wherein the data of the first frame is collected by a histogram having thirty-two storage modules and wherein each storage module operates to count a maximum intensity component of a particular color level associated with the  
25 first frame.

20. The control module of Claim 17, wherein the processor determines the target aperture position based at least in part on the data collected by a histogram and  
30 on a parameter associated with a number of clipped pixels.